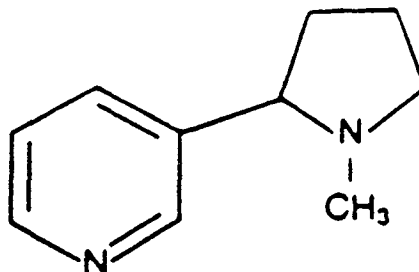


International Symposium on Nicotine

The Effects of Nicotine on Biological Systems II

*July 21-24, 1994
Hotel Le Chantecler
Montreal, Canada*



Satellite Symposium of the XIIth International
Congress of Pharmacology

2048712285

Meeting Organization

Organizing Committee

P.B.S. Clarke, Canada
M. Quik, Canada

F.X. Adlkofer, Germany
K. Thureau, Germany

International Advisory Committee

D.J.K. Balfour, UK
K. Bättig, Switzerland
N.L. Benowitz, USA
D.K. Berg, USA
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Contents

	Page
Scientific Program	1
Instructions for Symposium Speakers	7
Instructions for Poster Presenters	7
Poster Award Voting Slip	8
Symposium Abstracts	9
Poster Abstracts	13
Poster Abstract Addendum (P68a, P91)	26
First Author Index	27
List of Participants	33

Scientific Program

All symposium presentations and poster sessions will be held in **Seigneurie rooms I and II**. The Conference Secretariat office will be open during the entire meeting. It is situated on the main floor in room **Courmayeur**.

Thursday, July 21 - PM

14:00 - 19:00 REGISTRATION

19:00 - 20:00 SESSION 1: Overview

Chairperson: K. Thureau, Germany
(15 min presentation plus 5 min discussion)

19:00 **S1 - Current controversies in nicotine research**
P.B.S. Clarke, Canada

19:20 **S2 - Acute biological effects of nicotine and its metabolites**
N.L. Benowitz, USA

19:40 **S3 - Involvement of nicotine and its metabolites in the pathology of smoking and smoking-related diseases: Facts and hypotheses**
F. X. Adlkofer, Germany

20:00 BARBECUE ON TERRACE

Friday, July 22 - AM

08:30 - 12:00 SESSION 2: Structure and function of nicotinic receptors

Chairpersons: J. Patrick, USA and D. Bertrand, Switzerland
(20 min presentation plus 10 min discussion)

08:30 **S4 - Assembly of the $\alpha 7$ containing neuronal nicotinic acetylcholine receptor**
J. Patrick, USA

09:00 **S5 - Biochemical characterization of neuronal nicotinic receptors**
F. Clementi, Italy

09:30 **S6 - Neuronal nicotinic receptor structure and function**
J.M. Lindstrom, USA

10:00 BREAK/POSTERS (refreshments will be served)

2048712288

Friday, July 22 - AM (cont'd)

- 10:30 **S7** - Determinants regulating neuronal nicotinic receptor function
D. Bertrand, Switzerland
- 11:00 **S8** - Expression, function, and regulation of neuronal ACh receptors
containing the $\alpha 7$ gene product
D. Berg, USA
- 11:30 **S9** - Regulation of acetylcholine receptor genes expression during
synaptogenesis in muscle and brain
J.-P. Changeux, France
- 12:00 **LUNCH**

Friday, July 22 - PM

- 13:30 - 15:10 SESSION 3: Nicotinic receptor regulation and tolerance**
Chairpersons: M.J. Marks, USA and K.J. Kellar, USA
(15 min presentation plus 5 min discussion)
- 13:30 **S11** - The role of desensitization in CNS nicotinic receptor function
P.M. Lippiello, USA
- 13:50 **S10** - Biochemical measures of nicotinic receptor desensitization
M.J. Marks, USA
- 14:10 **S12** - Presynaptic heteroreceptors, autoreceptors and nicotinic receptor
subtypes
S. Wonnacott, UK
- 14:30 **S13** - Regulation of neuronal nicotinic receptors: *In vivo* and *in vitro* studies
K.J. Kellar, USA
- 14:50 **S14** - Conditioned tolerance to nicotine in rats
A.R. Caggiula, USA
- 15:10 - 18:00 BREAK/POSTERS**

2048712289

Friday, July 22 - PM (cont'd)

19:00 - 22:00 POSTER SESSION (wine, cheese, and more...)

There will be five awards (\$1,000 each) for the best poster presentations at the meeting. All meeting participants will be invited to submit their selection of the three best posters.

Saturday, July 23 - AM

08:30 - 12:00 SESSION 4: Neuronal, trophic and endocrine effects of nicotine

Chairpersons: M.J. Rand, Australia and K. Fuxe, Sweden
(15 min presentation plus 5 min discussion)

08:30 S15 - Developmental effects of nicotine
T.A. Slotkin, USA

08:50 S16 - Potentiation of transmission via presynaptic nicotine-activated channels permeable to calcium and blocked by α -BgTx
L.W. Role, USA

09:10 S17 - Electrophysiology of nicotinic receptors in rodent CNS
C. Mulle, France

09:30 S18 - Factors controlling nicotinic acetylcholine receptor expression on rat sympathetic neurons
E. Cooper, Canada

09:50 BREAK/POSTERS (refreshments will be served)
Deadline for submission of poster award voting slips

10:20 S19 - A role for the nicotinic α -bungarotoxin receptor in growth related processes
M. Quik, Canada

10:40 S20 - Mechanisms of nicotine stimulated cell proliferation in normal and neoplastic neuroendocrine lung cells
H.M. Schuller, USA

11:00 S21 - Brainstem catecholaminergic pathways activated by nicotine are involved in the hippocampal expression of c-FOS mRNA and protein, stimulation of the hypothalamic paraventricular nucleus and secretion of ACTH
B.M. Sharp, USA

2048712290

Saturday, July 23 - AM (cont'd)

- 11:20 **S22** - Nicotine-induced gene expression of proenkephalin in bovine chromaffin cells
V. Höllt, Germany
- 11:40 **S23** - Effects of nicotine on thromboxane and leukotriene synthesis in cellular systems
M. Goerig, Germany
- 12:00 **LUNCH**

Saturday, July 23 - PM

- 13:30 - 18:00 SESSION 5: Nicotine and smoking: Current controversies**
Chairpersons: K. Bättig, Switzerland and A.C. Collins, USA
(10 min presentation plus 5 min discussion)
- 13:30 **S24** - Smoking-induced alterations in brain electrical activity:
Normalization or enhancement?
V.J. Knott, Canada
- 13:45 **S25** - Nicotine and cognitive effects
I. Hindmarch, UK
- 14:00 **S27** - Self-administered nicotine acts through the ventral tegmental area: Implications for drug reinforcement mechanisms
W.A. Corrigall, Canada
- 14:15 **S28** - Desensitization of the stimulatory effects of nicotine on dopamine secretion in the mesolimbic system of the rat
D.J.K. Balfour, UK
- 14:30 **S29** - Mechanisms of acute and chronic tolerance to the behavioral effects of nicotine
J.A. Rosecrans, USA
- 14:45 **S30** - Behavioral and biochemical analysis of dependence properties of nicotine
T. Yanagita, Japan
- 15:00 **BREAK/POSTERS (refreshments will be served)**

2048712291

Saturday, July 23 - PM (cont'd)

- 15:30 **S31** - Nicotine intake is regulated in humans
M.A.H. Russell, UK
- 15:45 **S32** - There is more to smoking than the CNS effects of nicotine
J. Rose, USA
- 16:00 **S33** - Pharmacological determinants of cigarette smoking
J.E. Henningfield, USA
- 16:15 **S34** - Psychological resources from nicotine
D.M. Warburton, UK
- 16:30 **S26** - Evidence that nicotine is addictive
I.P. Stolerman, UK
- 16:45 **S35** - Nicotine is addictive
R. West, UK
- 17:00 **S36** - Science and common-sense support the view that nicotine is
not addictive
J.H. Robinson, USA
- 17:15 **S37** - Individual differences in tobacco use may be related to
genetically-determined differences in responses to nicotine
A.C. Collins, USA
- 17:30 General Discussion - Is there a resolution?
- 19:30 **BANQUET (a night to remember!)**
Announcement of poster award winners

Sunday, July 24 - AM

- 08:30 - 12:30 **SESSION 6: Nicotine and human diseases**
Chairpersons: K. Kochsiek, Germany and R. Quirion, Canada
(15 min presentation plus 5 min discussion)
- 08:30 **S38** - Relationship between smoking, nicotine and ulcerative colitis
G. Thomas, UK

2048712292

Sunday, July 24 - AM (cont'd)

- 08:50 **S39** - Beneficial effects of nicotine in Tourette's syndrome
P.R. Sanberg, USA
- 09:10 **S40** - Nicotine and neuropsychiatric disorders
J.R. Hughes, USA
- 09:30 **S41** - Nicotine, auditory gating, and schizophrenia
R. Freedman, USA
- 09:50 **S42** - Epidemiology of smoking and Parkinson's disease
J.A. Baron, USA
- 10:10 **S43** - Nicotine and animal models of Parkinson's disease
A.M. Janson, Sweden
- 10:30 BREAK (refreshments will be served; posters should
be removed at this time)**
- 11:00 **S44** - Memory enhancing effects of nicotine
E.D. Levin, USA
- 11:20 **S45** - Possible mechanisms underlying beneficial effects of nicotine
on cognitive function
M.H. Joseph, UK
- 11:40 **S46** - Nicotinic modulation of cognitive functioning in humans
P.A. Newhouse, USA
- 12:00 CLOSING REMARKS**
M.J. Rand, Australia
- 12:30 CLOSING LUNCHEON**

N.B. Please check bulletin board in Conference Secretariat for departure times to airports and downtown Montreal.

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INSTRUCTIONS FOR SYMPOSIUM SPEAKERS

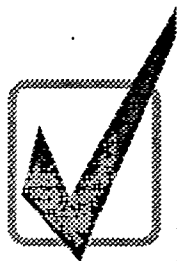
Speakers are requested to submit their slides to the projectionist in the conference room (Seigneurie I) **30 minutes** prior to the start of their session. Slide trays will be available in the conference room, where slides may be pre-screened if desired.

INSTRUCTIONS FOR POSTER PRESENTERS

The poster sessions will be held in Seigneurie I and II. Poster boards are numbered 1 - 137. The posters can be mounted after 3:00 p.m. on Thursday July 21 on the poster boards whose number corresponds to that of your poster abstract(s). Please refer to the first author index at the end of the Abstract Book for the appropriate poster abstract number. The posters will be on display for the duration of the meeting. Author attendance is requested during the BREAK/POSTER periods and at the poster wine and cheese evening.

Please note that the posters should be removed by 11:00 a.m. Sunday, July 24.

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POSTER AWARD VOTING SLIP

The Verum Foundation for Behaviour and Environment will award five prizes of \$1,000 Can each to the first authors of the best posters presented at the International Symposium on Nicotine in Ste Adèle. The winners will be selected by the conference participants. The scientific importance of the results and their visual presentation are to be appraised at a ratio of 2:1. The point system ranges from 1 (low) to 10 (high). Sum total = points for 'scientific relevance' x 2 + points for 'visual presentation'. Each participant may select three posters.

Voters are requested to fill out the voting slip and return it to the Conference Secretariat.
Deadline: Saturday, July 23 at 10:30 a.m.

POINTS TOTAL (out of 30)

POSTER NO. _____

Scientific importance	2 x	_____	=	_____
Visual presentation	+	_____		

POSTER NO. _____

Scientific importance	2 x	_____	=	_____
Visual presentation	+	_____		

POSTER NO. _____

Scientific importance	2 x	_____	=	_____
Visual presentation	+	_____		

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SYMPOSIUM ABSTRACTS

SESSION 1: OVERVIEW

- S1 Current Controversies in Nicotine Research, P.B.S. Clarke
- S2 Acute Biological Effects of Nicotine and its Metabolites, N.L. Benowitz
- S3 Involvement of Nicotine and its Metabolites in the Pathology of Smoking and Smoking-Related Diseases: Facts and Hypotheses, F.X. Adlkofer

SESSION 2: STRUCTURE AND FUNCTION OF NICOTINIC RECEPTORS

- S4 Assembly of the Alpha7 Containing Neuronal Nicotinic Acetylcholine Receptor, J. Patrick, D. Char, D. Chen, L. Colquhoun, H. Dang, F. Goldner, S. Helekar, K. Dineley and S. Neff
- S5 Biochemical Characterization of Neuronal Nicotinic Receptors, C. Gotti and F. Clementi
- S6 Neuronal Nicotinic Receptor Structure and Function, J.M. Lindstrom
- S7 Determinants Regulating Neuronal Nicotinic Receptor Function, D. Bertrand, S. Bertrand, I. Forster and J.-P. Changeux
- S8 Expression, Function, and Regulation of Neuronal ACh Receptors Containing the $\alpha 7$ Gene Product, D. Berg, W. Conroy, R. Corriveau, P. Pugh, M. Rathouz, S. Romano, S. Vijayaraghavan and Z.-W. Zhang
- S9 Regulation of Acetylcholine Receptor Genes Expression during Synaptogenesis in Muscle and Brain, J.-P. Changeux, J.L. Bessereau, A. Bessis, A. Duclert, C. Le Poupon, H.O. Nghi  m, A.M. Salmon and N. Savatier

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SESSION 3: NICOTINIC RECEPTOR REGULATION AND TOLERANCE

- S10 Biochemical Measures of Nicotinic Receptor Desensitization, M.J. Marks, S.R. Grady, S.F. Robinson, A.E. Bullock and A.C. Collins
- S11 The Role of Desensitization in CNS Nicotinic Receptor Function, P.M. Lippiello, M. Bencherif and R.J. Prince
- S12 Presynaptic Heteroreceptors, Autoreceptors and Nicotinic Receptor Subtypes, S. Wonnacott
- S13 Regulation of Neuronal Nicotinic Receptors: *In Vivo* and *In Vitro* Studies, K.J. Kellar, M.I. Davila-Garcia, Y. Xiao, R.A. Houghtling, R.D. Mellon, S.S. Qasba and C.M. Flores
- S14 Conditioned Tolerance to Nicotine in Rats, A.R. Caggiula, L.H. Epstein, S.M. Antelman, S. Knopf, K.A. Perkins, S. Saylor, E. Donny and R. Stiller

SESSION 4: NEURONAL, TROPHIC AND ENDOCRINE EFFECTS OF NICOTINE

- S15 Developmental Effects of Nicotine, T.A. Slotkin
- S16 Potentiation of Transmission via Presynaptic Nicotine-Activated Channels Permeable to Calcium and Blocked by α -BgTx, L.W. Role
- S17 Electrophysiology of Nicotinic Receptors in Rodent CNS, C. Léna, J.-P. Changeux and C. Mulle
- S18 Factors Controlling Nicotinic Acetylcholine Receptor Expression on Rat Sympathetic Neurons, E. Cooper and P. De Koninck
- S19 A Role for the Nicotinic α -Bungarotoxin Receptor in Growth Related Processes, M. Quik
- S20 Mechanisms of Nicotine Stimulated Cell Proliferation in Normal and Neoplastic Neuroendocrine Lung Cells, H.M. Schuller
- S21 Brainstem Catecholaminergic Pathways Activated by Nicotine are Involved in the Hippocampal Expression of c-Fos mRNA and Protein, Stimulation of the Hypothalamic Paraventricular Nucleus and Secretion of ACTH, B. Sharp

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- S22** Nicotine-Induced Gene Expression of Proenkephalin in Bovine Chromaffin Cells, V. Höllt, X. Wang and B. Bacher
- S23** Effects of Nicotine on Thromboxane and Leukotriene Synthesis in Cellular Systems, M. Goerig

SESSION 5: NICOTINE AND SMOKING: CURRENT CONTROVERSIES

- S24** Smoking-Induced Alterations in Brain Electrical Activity: Normalization or Enhancement? V. Knott
- S25** Nicotine and Cognitive Effects, I. Hindmarch
- S26** Evidence that Nicotine is Addictive, I.P. Stolerman and M.J. Jarvis
- S27** Self-Administered Nicotine Acts Through the Ventral Tegmental Area: Implications for Drug Reinforcement Mechanisms, W.A. Corrigall
- S28** Desensitisation of the Stimulatory Effects of Nicotine on Dopamine Secretion in the Mesolimbic System of the Rat, D.J.K. Balfour and M.E.M. Benwell
- S29** Mechanisms of Acute and Chronic Tolerance to the Behavioral Effects of Nicotine, J.A. Rosecrans, J.R. James and L.D. Karan
- S30** Behavioral and Biochemical Analysis of Dependence Properties of Nicotine, T. Yanagita, Y. Wakasa and K. Ando
- S31** Nicotine Intake is Regulated in Humans, M.A.H. Russell
- S32** There is More to Smoking than the CNS Effects of Nicotine, J. Rose
- S33** Pharmacological Determinants of Cigarette Smoking, J.E. Henningfield
- S34** Psychological Resources from Nicotine, D.M. Warburton
- S35** Nicotine is Addictive, R. West
- S36** Science and Common-Sense Support the View that Nicotine is not Addictive, J.H. Robinson and W.S. Pritchard

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- S37** Individual Differences in Tobacco Use May be Related to Genetically-Determined Differences in Responses to Nicotine, A.C. Collins, S.F. Robinson and M. Marks

SESSION 6: NICOTINE AND HUMAN DISEASES

- S38** Relationship between Smoking, Nicotine and Ulcerative Colitis, G.A.O. Thomas and J. Rhodes
- S39** Beneficial Effects of Nicotine in Tourette's Syndrome, P.R. Sanberg and A.A. Silver
- S40** Nicotine and Neuropsychiatric Disorders, J. Hughes
- S41** Nicotine, Auditory Gating, and Schizophrenia, R. Freedman, L.E. Adler, P. Bickford, V. Luntz-Leybman, K. Wear, L.J. Hoffer, J. Griffith, M. Waldo, H. Coon, M. Myles-Worsley, S. Leonard and W. Byerley
- S42** Epidemiology of Smoking and Parkinson's Disease, J.A. Baron
- S43** Nicotine and Animal Models of Parkinson's Disease, A.M. Janson, A. Møller, P.B. Hedlund, G. von Euler and K. Fuxe
- S44** Memory Enhancing Effects of Nicotine, E.D. Levin and D. Torry
- S45** Possible Mechanisms Underlying Beneficial Effects of Nicotine on Cognitive Function, M.H. Joseph, G. Grigoryan, H. Hodges and J.A. Gray
- S46** Nicotinic Modulation of Cognitive Functioning in Humans, P.A. Newhouse, A. Potter, M. Piasecki, J. Geelmuyden, J. Corwin and R. Lenox

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POSTER ABSTRACTS

SECTION 1: RECEPTOR LOCALIZATION

- P1** Distribution of Nicotinic Acetylcholine Receptor Subunit Immunoreactivities on the Surface of Chick Ciliary Ganglion Neurons, P.B. Sargent and H.L. Wilson
- P2** Effects of Denervation Upon Nicotinic Acetylcholine Receptor Clusters in Autonomic Neurons as Determined by Quantitative Laser Scanning Confocal Microscopy, P.B. Sargent and H.L. Wilson
- P3** Cellular Diversity in the Expression of Nicotinic Acetylcholine Receptor Subunits in the Chick Central Nervous System, E.M. Ullian and P.B. Sargent
- P4** Cellular and Subcellular Visualization of the $\beta 2$ - Subunit of the Nicotinic Acetylcholine Receptor in the Mouse Cerebral Cortex, R. Marks, J. Lindstrom and H. Schröder
- P5** Immunocharacterization of the Human Alpha 7 Neuronal Nicotinic Acetylcholine Receptor Subunit, M. Piattoni-Kaplan, D. Donnelly-Roberts, J. Pauly, D. Hill, J.B. Pan, S.P. Arneric and J.P. Sullivan
- P6** Localization of [^3H] Cytisine Nicotinic Binding Sites in Normal and Pathological Human Brain Using *In Vitro* Receptor Autoradiography, I. Aubert, D. Cécyre, S. Gauthier and R. Quirion

SECTION 2: RECEPTOR SUBTYPES - MOLECULAR BIOLOGY AND PHARMACOLOGY

- P7** Cloning and Functional Expression of Alpha 9: A Novel Acetylcholine-Gated Ion Channel, A.B. Elgoyhen, D. Johnson, J. Boulter, D. Vetter and S.F. Heinemann
- P8** Searching for an Acetylcholine-Gated Chloride Channel: Analysis of Cloned Leech Nicotinic Genes, R. Allen, M. Hartley and S. Heinemann
- P9** Heterologous Expression of Epitope-Tagged Neuronal Nicotinic and 5HT3A Receptor Subunits, J. Mukerji, E. Dumont and P. Séguéla

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